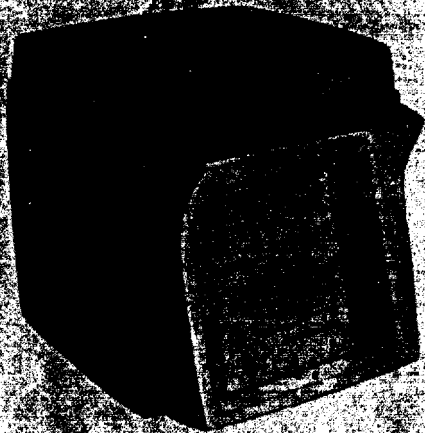


# TUTORFILM PROGRAM



## ELEMENTARY ELECTRONICS

*Elementary Electronics*, an automatic tutoring program designed for individual study with the AutoTutor teaching machine, provides basic instruction in the fundamentals of radio and electricity. Such devices as the resistor, the capacitor, the coil, the vacuum tube and the transformer are discussed and explained, and the student is provided with the information necessary for understanding all electrical circuits.

The course is particularly useful as an introduction to more advanced study in the field of electronics, or for improving the technical qualifications of personnel engaged in work in which a basic knowledge of electronic principles is useful or essential.

### CONTENTS:

- LESSON 1. The Unit of Electricity**  
Atomic structure—free electrons—electromotive force—current—resistance—Ohm's Law—power—test.
- LESSON 2. Electrical Circuits**  
Recognizing series and parallel circuits—Kirchhoff's Current and Voltage Laws—equivalent resistances—solving series-parallel circuits—test.
- LESSON 3. Alternating Current**  
Direction of electron movement—wave forms—waves and motion—frequency, wave speed, and wave length—test.
- LESSON 4. The Power of Magnetism**  
Natural magnets and magnetic fields—laws of magnetism—magnetic field created by electron current—effect of coiling a conductor—self-induction—test.
- LESSON 5. Inventing Radio**  
Radiant energy—voltages induced by radio waves—sound waves and radio waves—amplitude modulation—the basic radio receiver—reproduction of sound—test.
- LESSON 6. Coils and Capacitors**  
Induced EMF—current lag in an inductive circuit—inductance of a coil—inductive reactance—capacitors and electrostatic force in a charged capacitor—why current leads voltage in a capacitive circuit—capacitive reactance—test.
- LESSON 7. Order from Chaos**  
The tuner—inductance and capacitance in series—varying capacitance to adjust resonant frequency—signals at resonant frequency—test.
- LESSON 8. One-way Street**  
Need for rectification—crystal detectors—capacitor in parallel with reproducer—capacitive effects in a coil—test.
- LESSON 9. Diodes and Triodes**  
Diodes: the Edison effect—electron emission factors—space charge—plate supply voltage. Triodes: the control grid—amplification—triode characteristic curve—test.
- LESSON 10. A Few Improvements**  
Grid-leak detector—volume controls—transformers—air-core and iron-core transformers—transformer coupling—test.

**APPLICATIONS:** Enrichment course for high school science students; familiarization course for non-technical sales personnel dealing with customers in the electronics field; supplementary training for electronics industry management personnel not directly engaged in technical areas; adult education programs; company-sponsored employee training (either as part of apprentice program or for after-hour voluntary attendance program).

**STUDY TIME:** 10 to 15 hours

**STOCK No.:** ESD-310

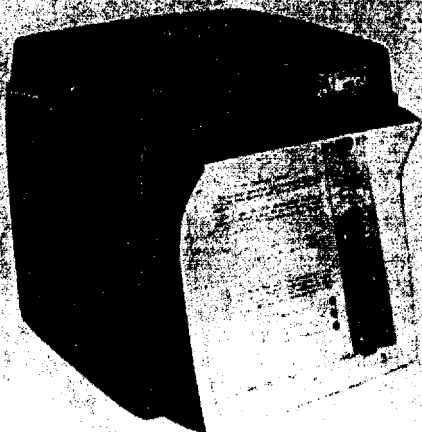
**PRICE:** \$100.00



**U.S. INDUSTRIES, INC. EDUCATIONAL SCIENCE DIVISION**  
250 PARK AVENUE • NEW YORK 17, N. Y. • OXFORD 7-6020

# TUTORFILM PROGRAM

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## FIRST YEAR ELECTRONICS

The TutorFilm\* program *First Year Electronics* was originally developed for U.S. Air Force trainees at Keesler Air Force Base. It was later extensively revised and reorganized to conform more closely to the standard electronics curricula used in schools and industry. The course contains approximately 11,000 frames of material and provides slightly more than two semesters at 3 hours per week, or 120 hours, of instruction.

Although the course was designed for use at the junior college level, it has been successfully studied by ninth and tenth graders. Students who are weak in mathematics receive supplementary mathematics instruction from special sub-sequences within the program and consequently require additional time to complete the course.

It is recommended that laboratory demonstrations and student exercises be integrated with the study of the theoretical material presented by the program.

The complete course is priced at \$375. The five volumes are also available separately at the prices given below. A course outline and an instructor's guide are provided with the course.

### CONTENTS:

#### VOLUME I — DIRECT CURRENT

1. Electron theory.
2. Statics.
3. Electron movement and measurement.
4. Resistance and conductance.
5. Color coding of resistors and the ohmmeter.
6. Introduction of circuits.
7. Power.
8. Kirchhoff's Laws.
9. Rheostats and potentiometers.
10. Parallel circuits.
11. Series-parallel circuits.
12. Resistance bridge circuits.

PRICE: \$125

#### VOLUME II — ALTERNATING CURRENT

13. Magnetism.
14. Electromagnetism.
15. Electromagnetic induction.
16. AC and generators.
17. Inductors.
18. Capacitors.
19. Transformers.

PRICE: \$80

#### VOLUME III — REACTIVE CIRCUITS

20. Introduction to oscilloscopes.
21. Math review of vectors and trigonometric functions.
22. Series RC circuits.
23. Series RL circuits.
24. Series RLC circuits.
25. Series resonance.
26. Parallel RC circuits.
27. Parallel RL circuits.
28. Parallel RLC circuits.
29. Parallel resonance.

PRICE: \$85

#### VOLUME IV — PRINCIPLES OF VACUUM TUBES AND TRANSISTORS

30. Vacuum tubes, diodes.
31. Metallic rectifiers.
32. Semiconductor rectifiers.
33. Power supplies, filter networks.
34. Vacuum tubes, triodes.
35. Triodes and pentodes.
36. Transistor triodes.
37. Voltage regulators.

PRICE: \$90

#### VOLUME V — SPECIAL PURPOSE TUBES

38. Basic measuring devices.
39. Special purpose tubes, transistors and CRT.

PRICE: \$60

**APPLICATIONS:** Junior or senior high school; junior college (five hours per week for one semester); large-scale training programs in industry; libraries.

**STUDY TIME:** 120 to 150 hours

**STOCK No.:** ESD-303

**COURSE PRICE:** \$375.00



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